



Attorney's Docket No.: 16163-021002 / GI5452

# 1631

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Robert Powers et al. Art Unit : 1631  
Serial No. : 09/942,055 Examiner : Channing S. Mahatan  
Filed : August 29, 2001  
Title : STRUCTURE OF A FREE REGULATOR OF G-PROTEIN SIGNALING (RGS4)  
AND METHODS FOR IDENTIFYING AGONISTS AND ANTAGONIST  
USING SAME

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Applicant submits the references listed on the attached form PTO-1449.

This statement is being filed after a first Office action on the merits, but before receipt of a final Office action or a Notice of Allowance. A check for \$180 in payment of the late submission fee of §1.17(p) is enclosed. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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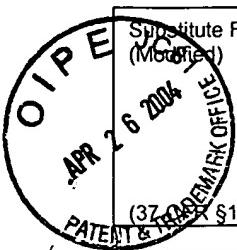
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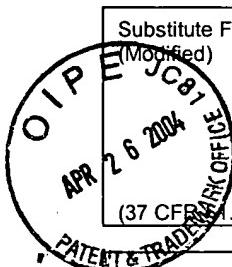
Substitute Form PTO-1449 (Modified)		U.S. Department of Commerce Patent and Trademark Office		Attorney's Docket No. 16163-021002	Application No. 09/942,055
<b>Information Disclosure Statement by Applicant</b> (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant Robert Powers et al.			
		Filing Date August 29, 2001	Group Art Unit 1631		

<b>U.S. Patent Documents</b>							
Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	AA						

<b>Foreign Patent Documents or Published Foreign Patent Applications</b>							
Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes      No
	AB						

<b>Other Documents (include Author, Title, Date, and Place of Publication)</b>		
Examiner Initial	Desig. ID	Document
	AC	Bax et al. "Measurement of Homo-and Heteronuclear J Couplings from Quantitative J Correlation." <u>Methods in Enzymol</u> 239:79-105, 1994.
	AD	Berghuis et al. "Structure of the GDP-Pi complex of Gly203-AlaG <sub>ia1</sub> : a mimic of the ternary product complext of Gα-catalyzed GTP hydrolysis." <u>Structure</u> 4:1277-1290, 1996.
	AE	Berman et al. :The GTPase-activating Protein RGS4 Stabilizes the Transition State for Nucleotide Hydrolysis." <u>J. Biol. Chem</u> 271:27209-27212, 1996.
	AF	Chen et al. "RGS-r, a retinal specific RGS protein, binds an intermediate conformation of transducin and enhances recycling." <u>Proc. Natl. Acad. Sci. USA</u> 93:12885-12889, 1996.
	AG	Clore et al. "Three-Dimensional Structure of Interleukin 8 in Solution." <u>Biochemistry</u> 29:1689-1696, 1990.
	AH	Coleman et al. "Structures of Active Conformations of G <sub>ia1</sub> and the Mechanism of GTP Hydrolysis." <u>Science</u> 265:1405-1412, 1994.
	AI	de Alba et al. "Solution Structure of Human GAIP (Gα Interacting Protein): A Regulator of G Protein Signaling." <u>J. Mol. Bio.</u> 291:927-939, 1999.
	AJ	DeVries et al. "RGS proteins: more than just GAPs for heterotrimeric G Proteins." <u>Trends Cell Biol.</u> 9:138-144, 1999.
	AK	DeVries et al. "GAIP, a protein that specifically interacts with the trimeric G protein G <sub>a13</sub> , in a member of a protein family with highly conserved core domain." <u>Proc. Natl. Acad. Sci USA</u> 92:11916-11920, 1995.
	AL	Dohlman et al. "RGS Proteins and Signaling by Heterotrimeric G Proteins." <u>J. Biol Chem.</u> 272:3871-3874, 1997.
	AM	Druey et al. "Inhibition of regulator of G protein signaling function by two mutant RGS4 proteins." <u>Proc. Natl. Acad. Sci. USA</u> 94:24:12851-12856, 1997.
	AN	Druey et al. "Inhibition of G-protein-mediated MAP kinase activation by a new mammalian gene family." <u>Nature</u> 379:742-746, 1996.
	AO	Farfel et al. "The Expanding Spectrum of G Protein Diseases." <u>N. Eng. J. Med.</u> 330:1012-1020, 1996.
	AP	Garrett et al. "The Impact of Direct Refinement against Three-Bond HN-C <sup>6</sup> H coupling Constants on Protein Structure Determination by NMR." <u>J. Magn. Reson. Serv. B</u> 104:99-103, 1994.

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	



Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 16163-021002	Application No. 09/942,055
<b>Information Disclosure Statement by Applicant</b> (Use several sheets if necessary) (37 CFR 1.98(b))		Applicant Robert Powers et al.	
		Filing Date August 29, 2001	Group Art Unit 1631

### Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	AQ	Garrett et al. "A Common Sense Approach to Peak Picking in Two-, Three-, and Four-Dimensional Spectra Using Automatic Computer Analysis of Contour Diagrams." <u>J. Magn Reso.</u> 95:214-220, 1991.
	AR	Gold et al. "Regulators of G-Protein Signaling (RGS) Proteins: Region-Specific Expression of Nine Subtypes in Rat Brain." <u>J. Neurosci.</u> 17:8024-8037, 1997.
	AS	Ikura et al. "Three-Dimensional NOESY-HMQC Spectroscopy of a <sup>13</sup> C-Labeled Protein." <u>J. Magn Reson.</u> 86:204-209, 1990.
	AT	Kozasa et al. "p115 RhoGEF, a GTPase, Activating Protein for Gα <sub>12</sub> and G α <sub>13</sub> ." <u>Science</u> 280:2109-2112, 1998.
	AU	Kraulis et al. "Determination of the Three-Dimensional Solution Structure of the C-Terminal Domain of Cellobiohydrolase I from <i>Trichoderma reesei</i> ." A Study Using Nuclear Magnetic Resonance and Hybrid Distance Geometry-Dynamical Simulated Annealing." <u>Biochemistry</u> 28:7241-7257, 1989.
	AV	Kuszewski et al. "The Impact of Direct Refinement against <sup>13</sup> C <sup>a</sup> and <sup>13</sup> C <sup>b</sup> Chemical Shifts on Protein Structure Determination by NMR." <u>J. Magn. Reson. Ser. B</u> 106:92-96, 1995.
	AW	Mixon et al. "Tertiary and Quaternary Structural Changes in G <sub>ia1</sub> Induced by GTP Hydrolysis." <u>Science</u> 270:954-960, 1995.
	AX	Moy et al. "NMR Solution Structure of the Catalytic Fragment of Human Fibroblast Collagenase Complexed with a Sulfonamide Derivative of a Thydroxamic Acid Compound." <u>Biochemistry</u> 38:22:7085-7096, 1996.
	AY	Moy et al. "Letter to the Editor: <sup>1</sup> H, <sup>15</sup> N, <sup>13</sup> C, and <sup>13</sup> CO assignments and secondary structure determination of RGS4." <u>J. Biomol NMR</u> 15:339-340, 1999.
	AZ	Nilges et al. "Determination of three-dimensional structures of proteins by simulated annealing with interproton distance restraints. Application to crambin, potato carboxypeptidase inhibitor and barley serine proteinase inhibitor 2." <u>Protein Eng</u> 2:27-38, 1988.
	AAA	Sprang, S.R. "G Protein Mechanisms: Insights from Structural Analysis." <u>Annu. Rev. Biochem</u> 66:639-678, 1997.
	ABB	Srinivasa et al. "Mechanism of RGS4, a GTPase-activating Protein for G Protein α Subunits." <u>J. Biol. Chem.</u> 273:1529-1533, 1998.
	ACC	Tesmer et al. "Structure of RGS4 Bound to AlF <sub>4</sub> -Activated G <sub>ia1</sub> : Stabilization of the Transition State for GTP Hyrolysis." <u>Cell</u> 89:251-261, 1997.
	ADD	Vuister et al. "An Empirical Correlation between <sup>1</sup> J <sub>CuHα</sub> and Protein Backbone Conformation." <u>J. Am. Chem. Soc.</u> 114:9674-9675, 1992.
	AEE	Wang et al. "RGSZ1, a G <sub>z</sub> -selective RGS Protein in Brain." <u>J. Biol. Chem.</u> 273:26014-26025, 1998.
	AFF	Watson et al. "RGS family members: GTPase-activating proteins for heterotrimeric G-protein α-subunits." <u>Nature</u> 383:172-175, 1996.
	AGG	Zheng et al. "Divergence of RGS proteins: evidence for the existence of six mammalian RGS subfamilies." <u>TIBS</u> 24:411-414, 1999.

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